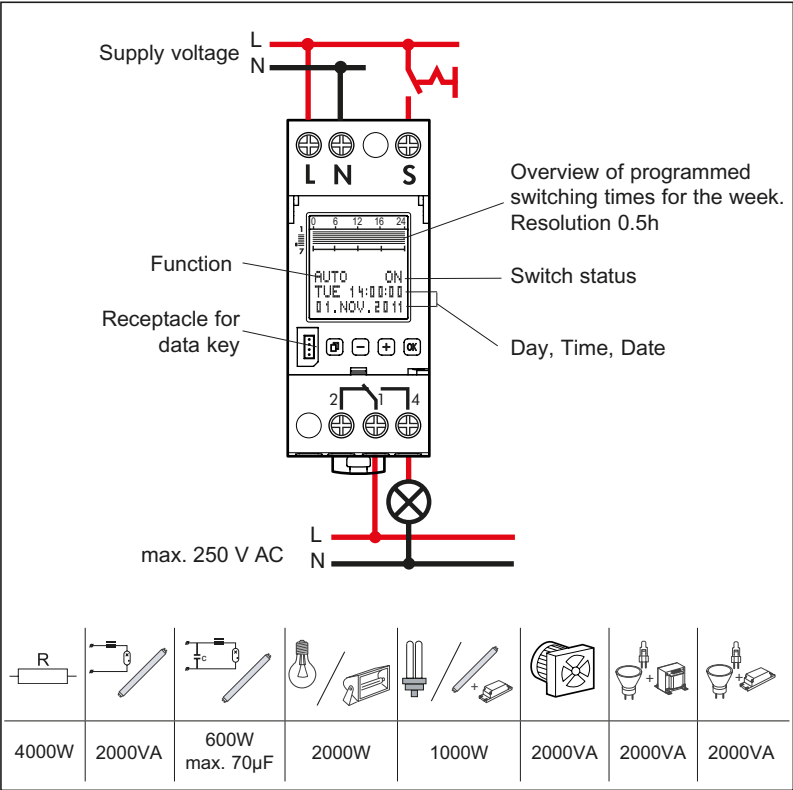


⚠ Safety notes



This product may be installed only by a qualified electrician. Non-compliance may result in a fire hazard or electric shocks. Before installation, read the operating instructions and observe the product-specific requirements for the installation location. Use only original spare parts for repair and maintenance. All products may be opened and repaired only by specially trained personnel. Unauthorised opening and repair by other persons will invalidate all claims for liability, replacement or warranty services. The device contains a LiMnO₂ primary cell. When the product reaches the end of its life, this cell must be correctly removed and disposed of in accordance with national legislation and the requirements of environmental protection.

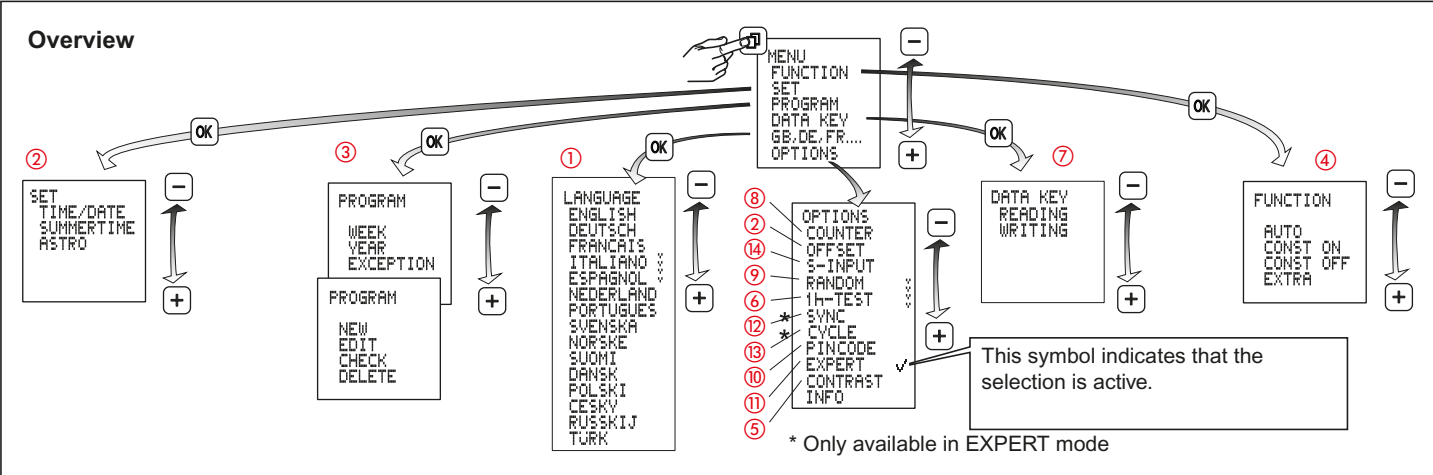


Operating principle: Type 1.B. S. T.
IEC/EN 60730-1, IEC/EN 60730-2-7
Montage: in distribution panel,
Degree of contamination: 2
Switch output, potential-free
Rated impulse voltage: 4 kV

General information

- Start-up: after applying the supply voltage, the time switch starts automatically with the last selected function. The relay position is set by the current program.
- Battery backup
 - Backlighting not active
 - Data key READ/WRITE only via the menu

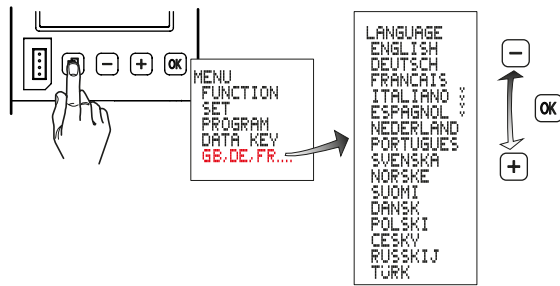
- Select menu, back to main menu, Hold down > 1s = operating display
- Confirm selection or load parameters
- Select menu options or set parameters



Technical data

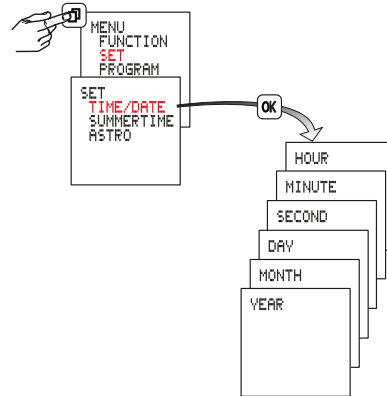
Supply voltage:	230V 50/60Hz	Control-cable length:	max. 50m
Power consumption:	approx. 1 W	Control signal:	230V AC/ca. 2mA
Relay outputs:	1 changeover contact 16A 250V~μ cos φ = 1	Control-pulse duration:	100...200ms
Accuracy:	~ 0,1 s/day	Delaytime:	0 ... 23 h 59 min 59 s
	single-strand	Local coordinates:	Resolution 1' / 1' in EXPERT-Mode
Wire cross-sections:	1,5...4 mm ²	Battery reserve:	5 years
Programs	3 program types x 28 programs	Storage temperature:	- 20°C to +60°C
		Operating temperature:	-20°C to +55°C

1 Set language

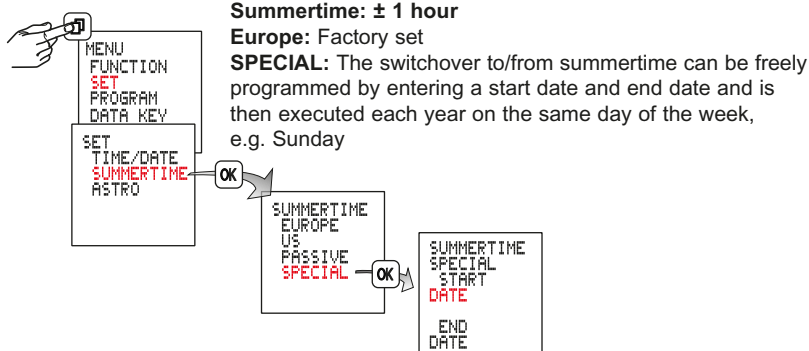


2 Set

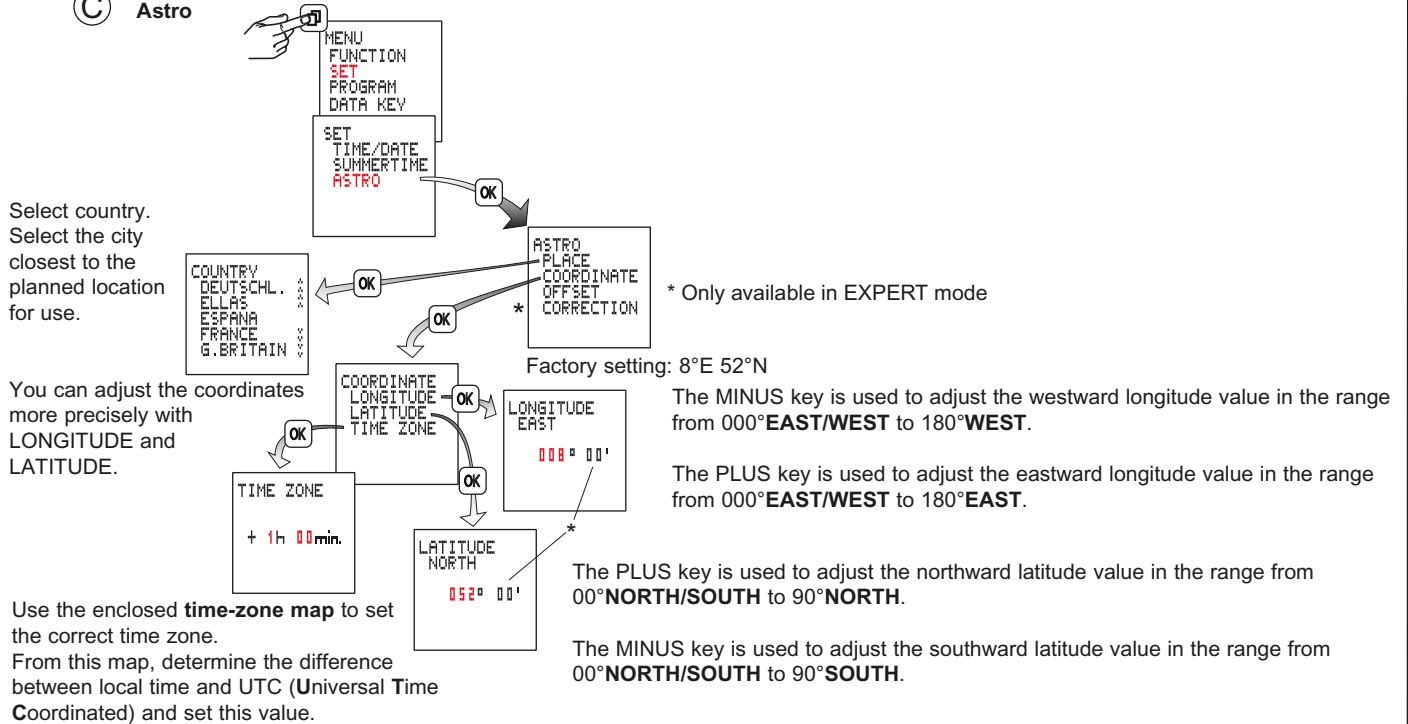
A Set time/date



B Summertime



C Astro



Ⓓ

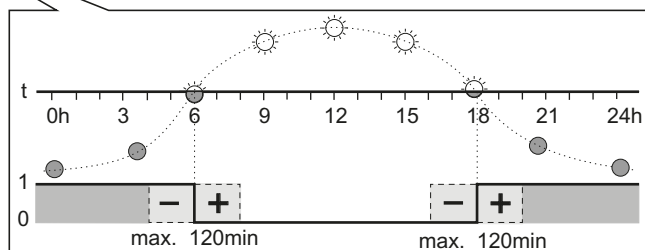
Offset



* This function is available in Expert mode.

Setting the correction value (1...30 min.) extends the daily ON period in the middle of the winter season by up to 60 minutes (OFF up to 30 min. later in the morning, ON up to 30 min. earlier in the evening).

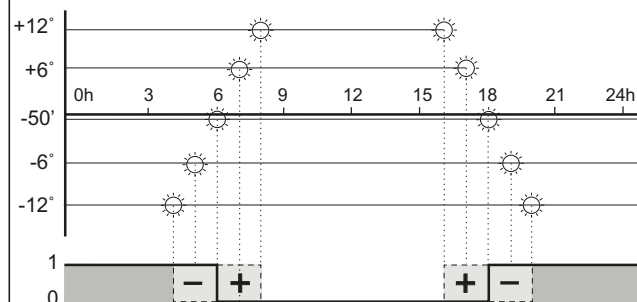
In the middle of the summer season, the correction setting reduces the daily ON period by up to 60 minutes (OFF up to 30 min. earlier in the morning, ON up to 30 min. later in the evening).



The time switch switches on at the calculated sunset time and off at the calculated sunrise time.

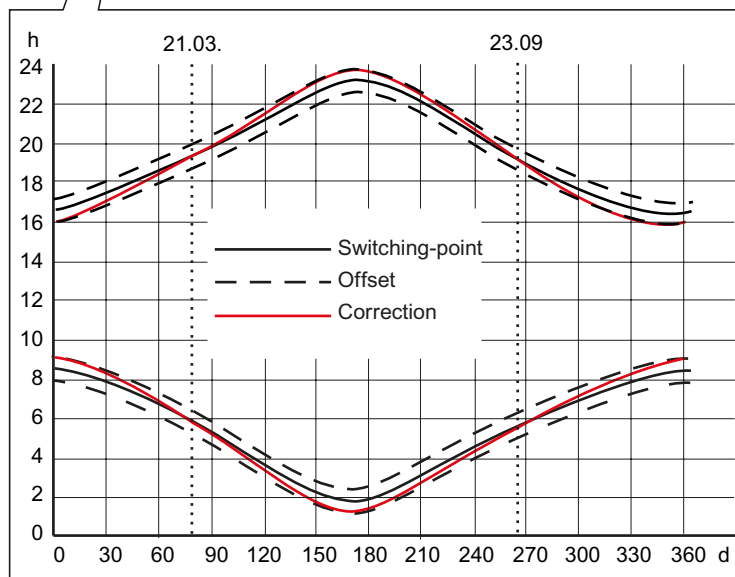
By setting an offset, you can shift the switching times by up to ± 120 minutes with respect to the calculated sunrise and sunset times.

Example: If you set the offset to +30 minutes, the time switch will switch 30 minutes after sunrise and 30 minutes after sunset. If you set the offset to -30 minutes, the time switch will switch 30 minutes before sunrise and 30 minutes before sunset.



If the offset setting is in degrees the time switch switches on and off at times of equal brightness, despite the differences in twilight time lengths over the course of the year.

Sunrise and sunset correspond to $-50'$ for the centre of the sun (the edge of the sun is visible on the horizon).



3A PROGRAM / WEEK

This menu item is provided for the simple input of programs which are to be repeated weekly (such as switching of lights and boilers). A weekly program consists of an ON time, an OFF time and the associated ON and OFF days.

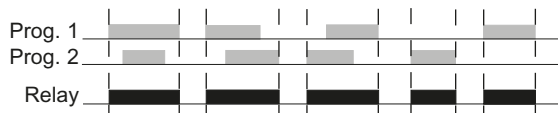
• **MON TO SUN:** the days of the week are already assigned and you only need to set the ON and OFF times.

This is used where the same program is to be executed on every day of the week.

• **INDIVIDUAL:** you can assign the ON and OFF times to any desired days. This is used where the same program is to be executed only on certain days of the week or different programs are to be executed on the various days.

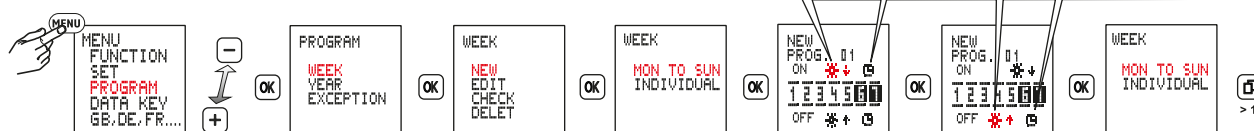
OR function

The programs defined for each channel are ORed together. In other words, the output will be active if this is defined in any of the programs.



Sample WEEK program

The timer is to switch on at sunset on each day of the week and switch off at sunrise.



3B PROGRAM / YEAR

This menu item permits the input of (additional) annual programs which are to be executed only during a specified period. These programs and the weekly programs of the same channel are ORed together as described above.

The period during which a program is to be executed is defined by entering a start date and an end date.

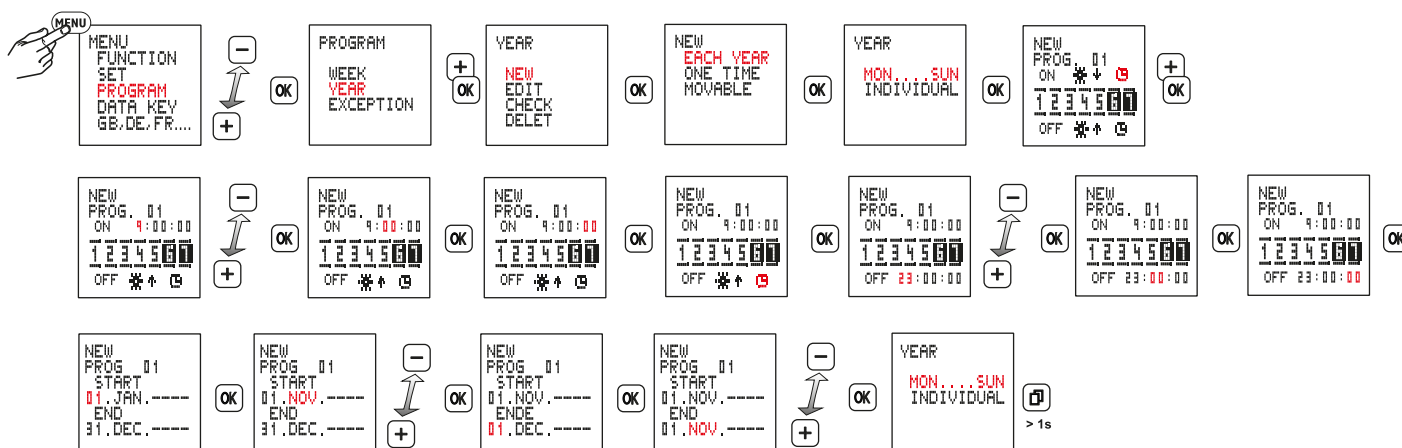
• The option **EVERY YEAR** should be selected if the additional program is to be executed during the same period of each year (e.g. Christmas, national holidays, birthdays, etc.).

• The option **ONCE** should be selected if the additional program is to be executed only during a single period (e.g. vacation period), but the start and end dates of this period are different in each year.

• The option **MOVABLE** should be selected if additional switching times are to be performed on movable public holidays/special days. (e.g. Easter, Whitsun, etc.). Entry is always for the current year. In the years that follow, the switch always takes place on the selected movable public holidays/special days. Default is Easter Sunday of the current year. → 3D

Sample YEAR program

Activate each year on at 09:00 hours on 01.11. and deactivate at 23:00 hours.



The weekly and annual programs defined are not executed as long as an extra program is active.

However, other exception programs will be executed while an exception program is active.

The various exception programs are ORed together as described above. (see OR function 3a)

- The option EVERY YEAR should be selected if the exception program is to be activated for the same period in each year (e.g. Christmas, national holidays, birthdays, etc.).

- The option ONCE should be selected if the exception program is to be activated only during a single period (e.g. vacation period), but the start and end dates of this period are different in each year.

The option MOVABLE should be selected if additional switching times are to be performed on movable public holidays/special days.

(e.g. Easter, Whitsun, etc.). Entry is always for the current year. In the years that follow, the switch always takes place on the selected movable public holidays/special days. Default is Easter Sunday of the current year. → 3D

- Option MON TO SUN: the exception program is active from 00:00 hours on the start date to 24:00 hours on the end date. During this period, the time switch switches only as defined in the exception program.

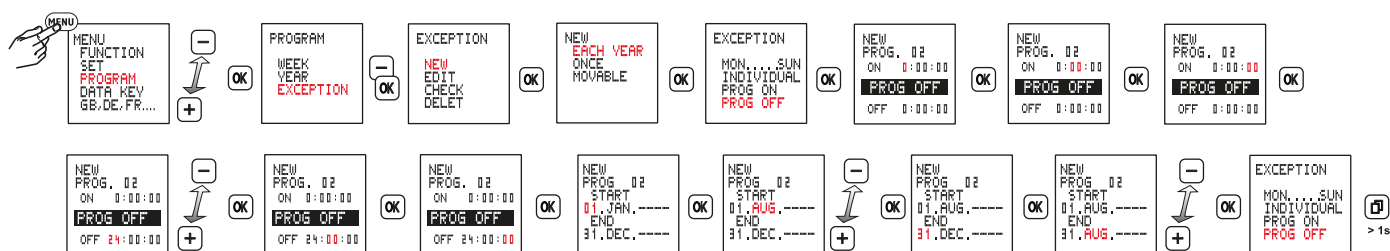
- Option INDIVIDUAL: the exception program is active from 00:00 hours on the start date to 24:00 hours on the end date. During this period, the switching is only as defined in the exception program.

- Option PROG ON: the exception program is active from the ON time on the start date to OFF time on the end date. During this period, the output is permanently on.

- Option PROG OFF: the exception program is active from the ON time on the start date to OFF time on the end date. During this period, the output is permanently off.

Sample EXCEPTION programs

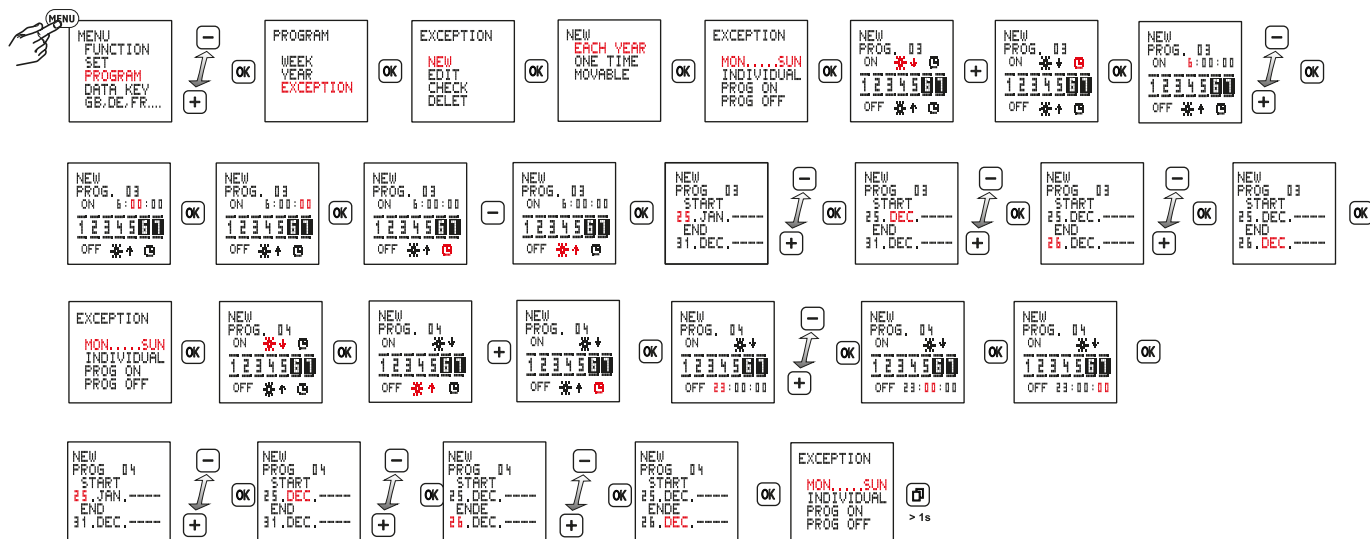
- ① The output is to be switched off each year for the entire period 01.08. to 31.08.



- ② Each year from 25.12. to 26.12., the output is to be switched on at 6:00 hours, switched off at sunrise, switched on at sunset and switched off at 23:00 hours. For this, two programs are needed:

Program 1: ON at 6:00 and OFF at sunrise

Program 2: ON at sunset and OFF at 23:00



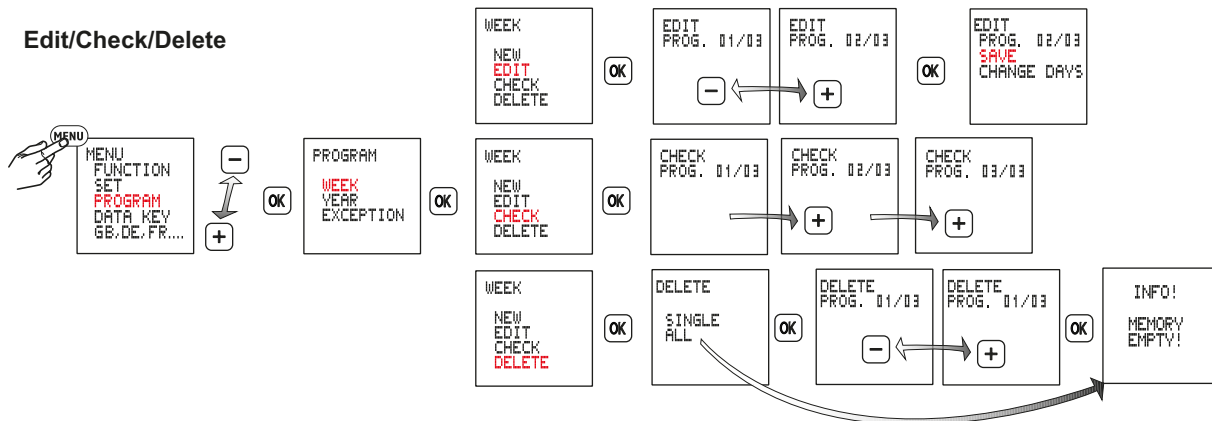
Movable public holidays/special days

The clock calculates movable public holidays which are dependent on the liturgical* Easter date according to the rule of Gauß and therefore takes into account the annual shift of the Easter date. The movable public holidays align with the shift; they are always realised with a certain number of differential days to Easter.

* Note: In some years, there is a difference between the liturgical and orthodox Easter date.

Name of public holiday	Time to Easter Sunday
Maundy Thursday	- 3 days
Good Friday	- 2 days
Easter Sunday	0
Easter Monday	+1 day
Ascension Day	+ 39 days
Whit Sunday	+ 49 days
Whit Monday	+ 50 days
Corpus Christi	+ 60 days

3E Edit/Check/Delete



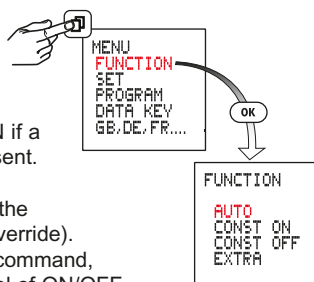
4 Modes

- **Auto** - Automatic operation
- **Constant ON**
- **Constant OFF**

Note: The output is switched ON if a control input signal is present.

• Extra

The switch status imposed by the program is inverted (manual override). With the next effective switch command, the time switch resumes control of ON/OFF switching.



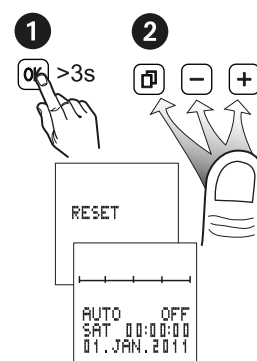
Reset

Warning!

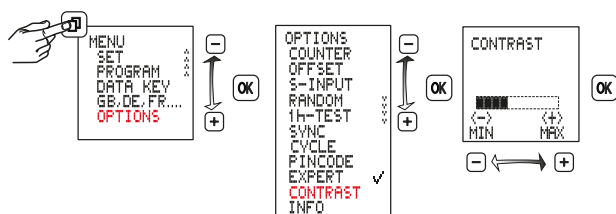
The memory will be cleared, and all set data will be lost.

Hold down **OK** for more than 3 seconds and at the same time press and release **□** **-** **+**.

The language, time, date, summertime/ wintertime and switching times will have to be reentered.

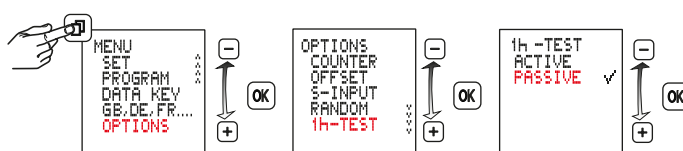


5 Contrast adjustment



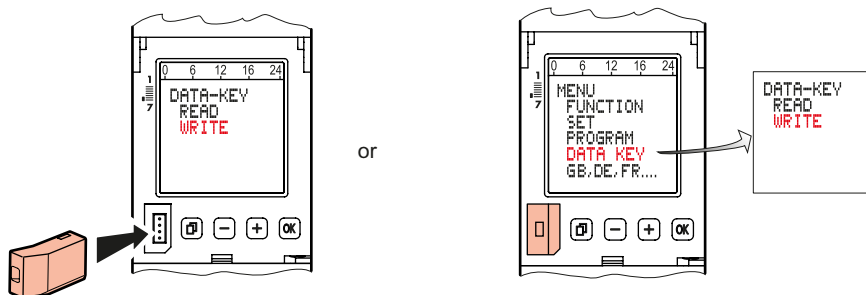
6 1 h-Test

When this function is activated, the output is switched ON for one hour.



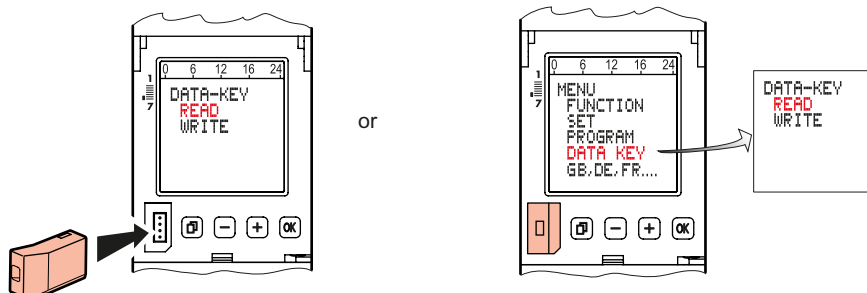
After one hour, the time switch returns automatically to the programmed mode.

7 Data key



Load the programs of the time switch on to a data key (WRITE KEY)

Warning! all programs stored on the data key will be overwritten.

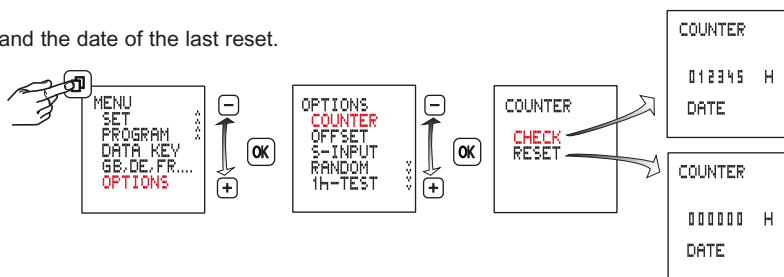


Load the programs from the data key to the time switch (READ KEY)

Warning! all programs stored in the time switch will be overwritten.

8 Hour counter

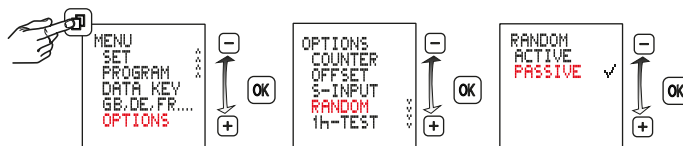
Displays the total relay ON time (0 to 65535 h) and the date of the last reset.



9 Random function

Function to simulate presence.

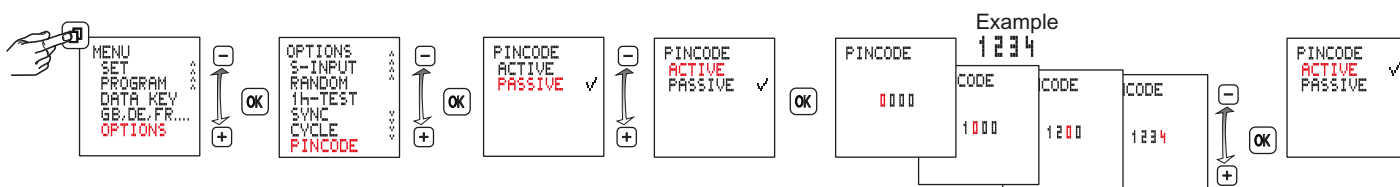
Function active: the programmed switching cycles are shifted at random within the range of ± 15 minutes.



10 Pincode

PIN CODE active: The menus of the time switch will not be accessible unless the PIN CODE has been entered. When the pin code is active, access to the button and key functions is disabled 1 minute after the last button press.

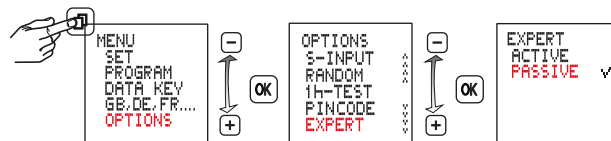
PIN free access can be re-enabled by selecting PASSIVE or by resetting the device.



11 Expert mode

Some additional functions are available in Expert mode:

- Power grid synchronisation to improve the accuracy
- Cycle function
- Summer / winter seasonal correction
- Control input Extra and Off

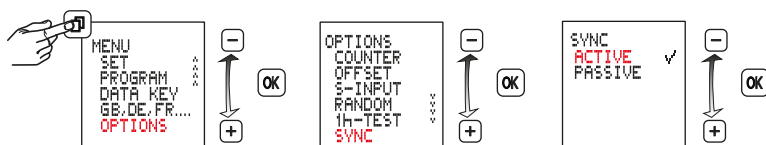


Note: Upon switching from ACTIVE to PASSIVE the additional menu items are hidden again and all the Expert mode settings are cancelled. After re-activating, Expert mode will operate again with the basic settings.

12 Activating and deactivating grid synchronisation

Only available in EXPERT mode.

The default setting is PASSIVE. In order to improve the long-term accuracy, it is advisable to activate synchronisation if the time switch is supplied from a on 50/60 Hz grid with frequency adjustment.

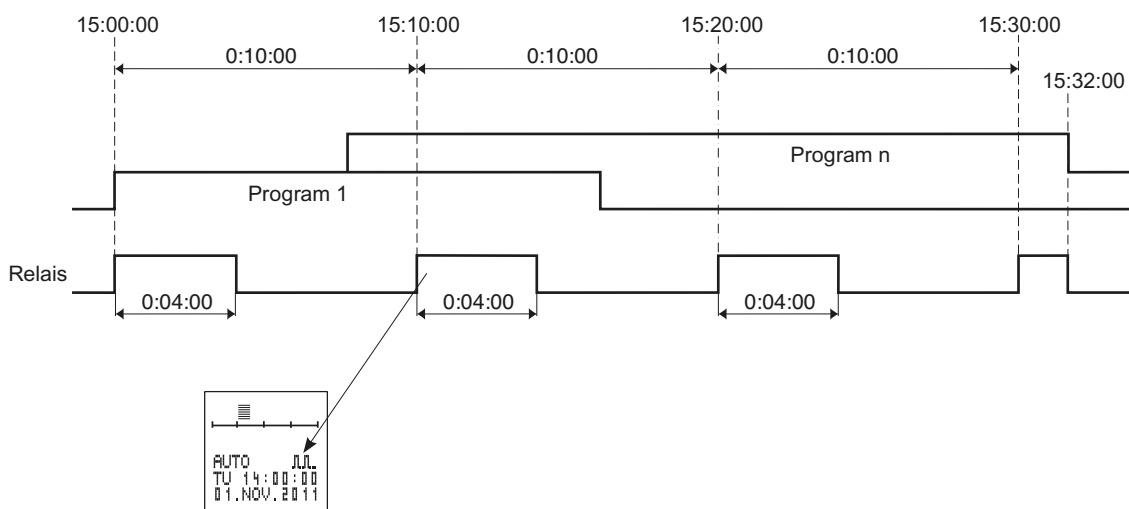
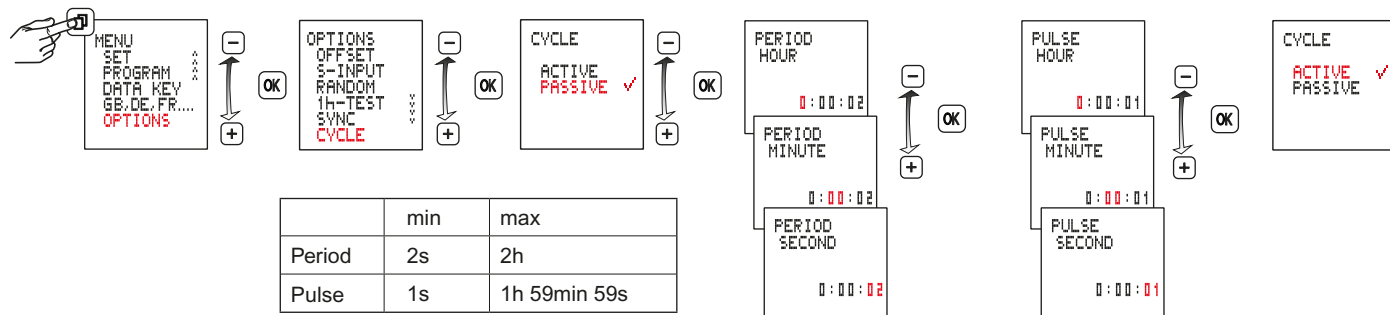


13 Cycle function

Only available in EXPERT mode

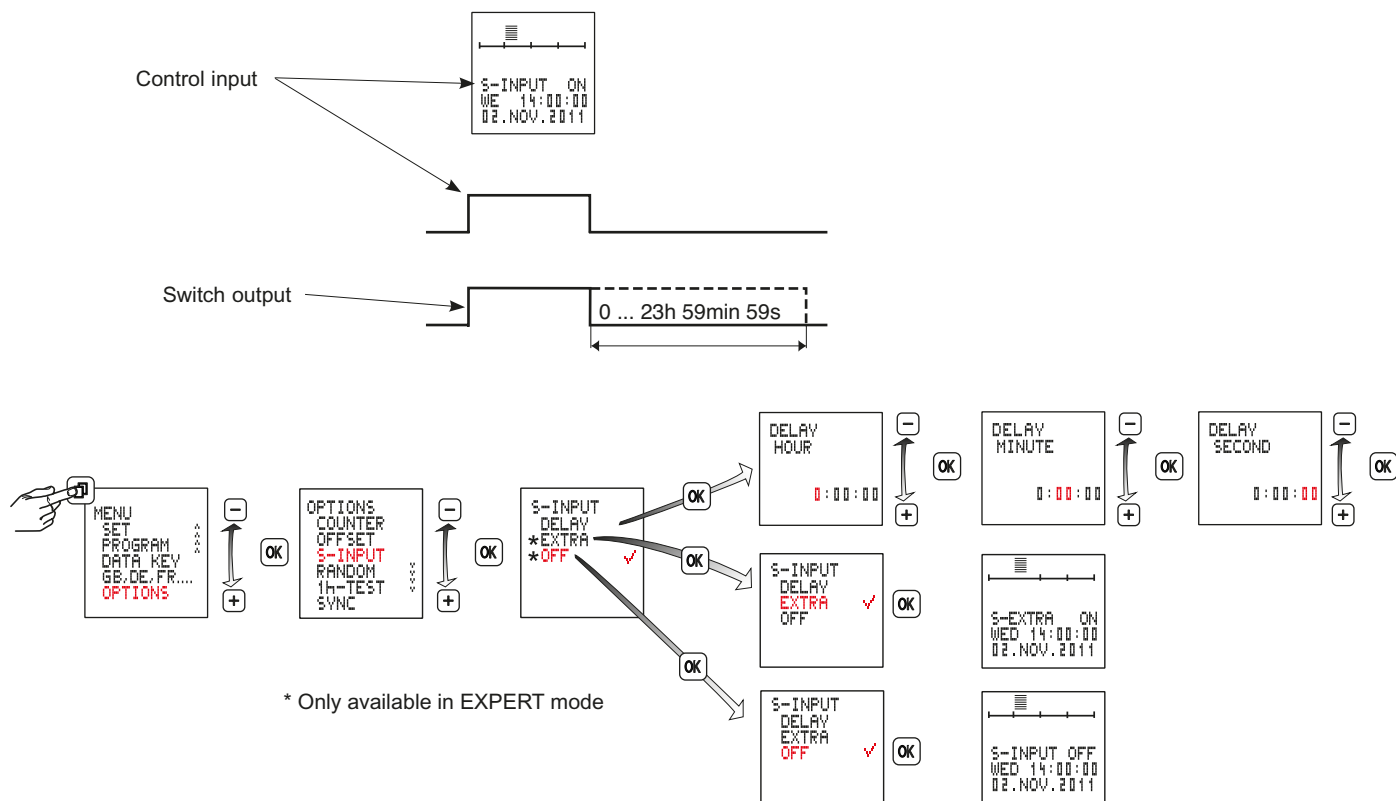
For cyclical switch commands the switching on time is set by logical "OR" of programs of all types. A fixed cycle of ON and OFF time then operates within those limits. The cycle always starts with the ON time.

The cycle duration and the ON time within the cycle have the same length for all switching times. The cycle duration and the ON time can be set independently in one-second increments. If the switching time is shorter than the cycle duration, the cycle will be shortened accordingly. The ON time will remain unchanged. If the switching time is actually shorter than the ON time, the ON time will be shortened accordingly.



14 Control input with delay time

A control signal is superimposed on all program commands. While this control signal is applied, the output is switched ON. When the control signal is switched off, the output is switched OFF after a delay time, unless an ON command is applied by a program.



DELAY

The output switches on when the control input is activated and remains switched on for the duration of the set delay time after the control input has been deactivated. Delay time setting range 0h 00min 00s ... 23h 59min 59s. The control input can be subsequently triggered within the delay time.

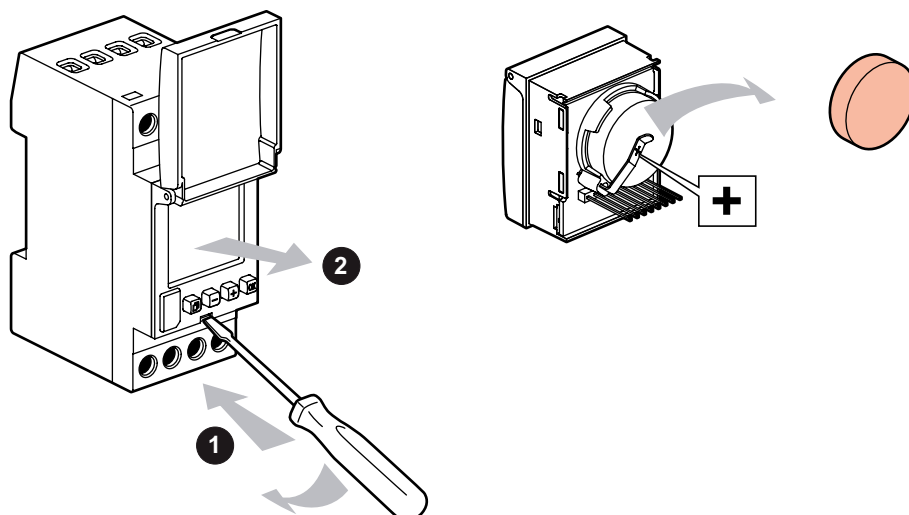
EXTRA

The control input signal inverts the switching state specified by the program.
At the next valid switching command the time switch resumes switching ON and OFF.

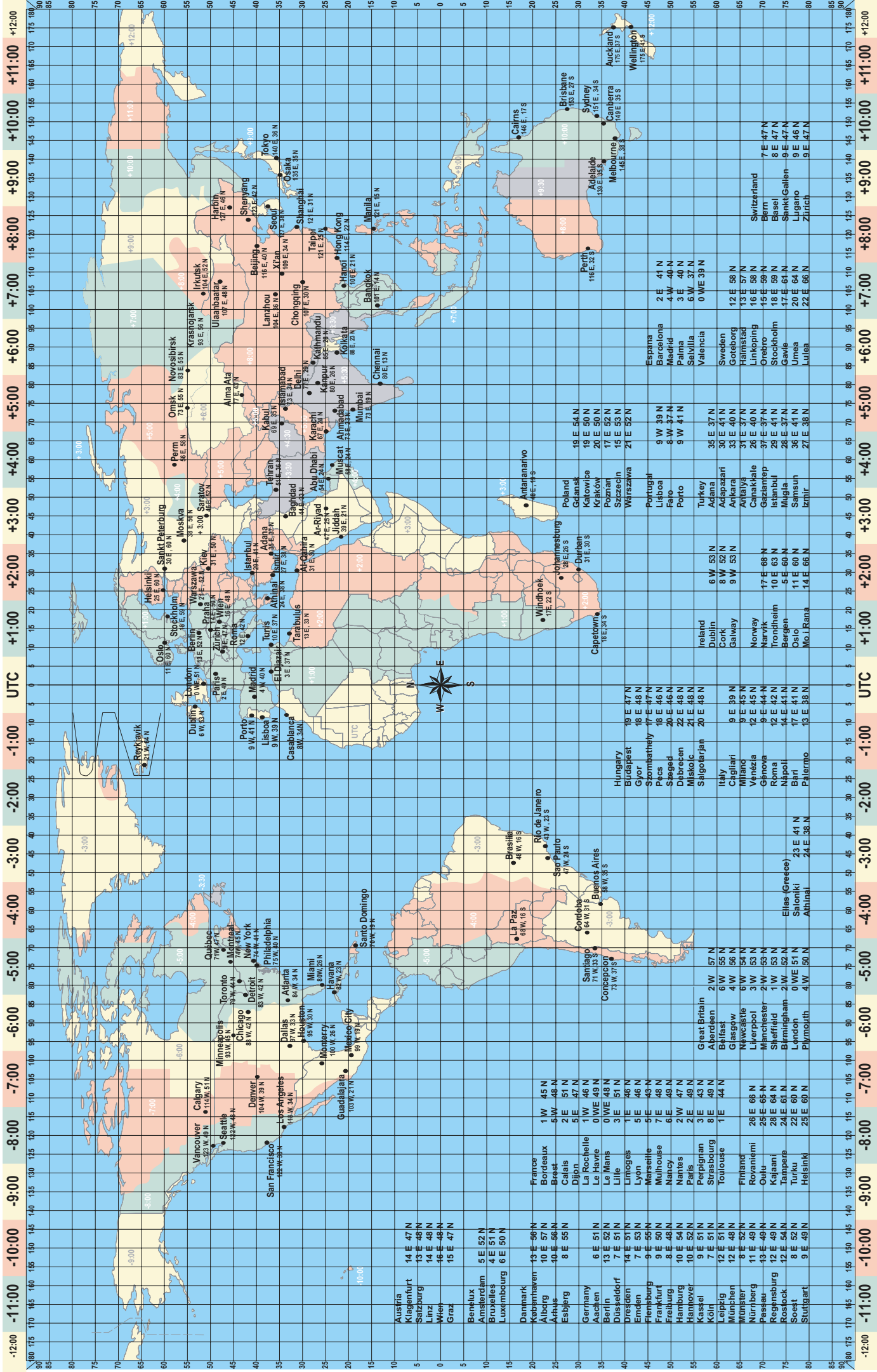
OFF

The control input signal sets the switching state to OFF if the program specifies ON.

Warning: Electrical shock - Disconnect all power from the device before dismantling the module and replacing the battery.
Always use a Li cell type battery (LiMnO₂) CR2477, 3V high temperature type min +85 °C



Time-of-day map



Required inputs, depending on the program type and menu options.

Program type	Execution	Characteristics	ON/OFF times	Weekday assignments	Active period START date	Active period END date	Application, objectives, examples
WEEK	Repeated weekly	MON TO SUN	●	○	○	○	The same switching cycle is to be executed on every day of each week. Example: switch lights on at sunset and off at 22:30:00 hours each day.
		INDIVIDUAL	●	●	○	○	A switching cycle is to be executed only on specific days of each week. Example: switch lights on at sunset and off at 22:30:00 hours on Monday to Friday of each week.
YEAR	EVERY YEAR	MON TO SUN	●	○	Day, month, ----	Day, month, ----	<ul style="list-style-type: none"> A switching cycle is to be executed on each day within a specified period of each year. Example: switch on the outside lights of a church from 17:00:00 to 24:00:00 in the period 1 December to 31 December. An existing weekly program is to be supplemented with additional switching times on each day during a specific period of each year.
		INDIVIDUAL	●	●	Day, month, ----	Day, month, ----	<ul style="list-style-type: none"> A switching cycle is to be executed on certain days of the week within a specified period of each year. Example: switch on the outside lights of a church from 17:00:00 to 24:00:00 on each Sunday in the period 1 December to 31 December. An existing weekly program is to be supplemented with additional switching times on certain days of the week during a specific period of each year.
	ONCE	MON TO SUN	●	○	Day, month, year	Day, month, year	<ul style="list-style-type: none"> A switching cycle is to be executed on each day of a specified period in a specified year. Example: in the year 2012, the heating in a holiday chalet is to be switched on from 07:30:00 to 23:00:00 on each day during the Easter holidays (25 March to 28 March 2012). An existing weekly program is to be supplemented with additional switching times on each day during a specific period of a specific year.
		INDIVIDUAL	●	●	Day, month, year	Day, month, year	<ul style="list-style-type: none"> A switching cycle is to be executed on certain days of a specified period in a specified year. Example: in the current year, the lights in a sports hall are to be switched on from 19:00:00 to 22:00:00 on each Tuesday and Friday during the period from 10 January to 23 March. An existing weekly program is to be supplemented with additional switching times on certain days of the week during a specific period of a specific each year.
	MOVABLE	MON TO SUN	●	○	Day, month, year	Day, month, year	An annual program is to perform a switching cycle every year at Easter. e.g. In 2014 and in subsequent years, the heating in a holiday home is to be switched on every day from 07:30:00 to 23:00:00 during the week before and after Easter.
		INDIVIDUAL	●	●	Day, month, year	Day, month, year	An annual program is to perform a switching cycle every year on Ascension Day. e.g. Every year on Ascension Day, the outside lighting at a bakery is to be switched on from 07:00:00 to 11:00:00.

Program-type	Execution	Characteristics	ON/OFF times	Weekday assignments	Active period START date	Active period END date	Application, objectives, examples
EX-CEP-TION	EVERY YEAR	MON TO SUN	●	○	Day, month, ---- from 0:00:00 hours	Day, month, ---- to 24:00:00 hours	An exception program is to completely replace any existing weekly or annual program on each day during a specific period of each year. Example: the irrigation pump of an orchard is to be switched on from 17:00:00 to 18:00:00 on each day in the period from 20 March ---- to 10 April ----.
		INDIVIDUAL	●	●	Day, month, ---- from 0:00:00 hours	Day, month, ---- to 24:00:00 hours	An exception program is to completely replace any existing weekly or annual program on certain days during a specific period of each year. Example: the irrigation pump of an orchard is to be switched on from 17:00:00 to 18:00:00 on each Monday and Friday in the period from 11 April ---- to 15 May ----.
		PROG ON	●	○	Day, month, ---- from ON time	Day, month, ---- to OFF time	A channel is to be switched on continuously from the ON time on the START date to the OFF time on the END date every year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: instead of the normal times for illumination of a public building, the illumination is to be switched on from 17:00:00 on the national holiday ---- until 07:00:00 the next morning 4 October ----.
		PROG OFF	●	○	Day, month, ---- from ON time	Day, month, ---- to OFF time	An output is to be switched off continuously from the ON time on the START date to the OFF time on the END date every year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: in order to save power, certain equipment in a factory is to be switched off during the Christmas holiday period of each year. i.e. from 18:00:00 on 23 December ---- to 6:00:00 on 27 December ----.
	ONCE	MON TO SUN	●	○	Day, month, year from 0:00:00 hours	Day, month, year to 24:00:00 hours	On each day during a specific period of a specified year, an exception program is to completely replace any existing weekly or annual program. Example: during the Christmas holidays of the year 2012, the heating in an apartment is to be switched each day from 7:00:00 to 23:00:00, instead of in the normal cycle. This exception period is to begin on 24 December 2012 and end on 06 January 2013.
		INDIVIDUAL	●	●	Day, month, year from 0:00:00 hours	Day, month, year to 24:00:00 hours	On certain weekdays during a specific period of a specific year, an exception program is to completely replace any existing weekly or annual program. Example: in December 2012, the heating system of a department store is to be switched on from 8:00:00 to 18:00:00 each Sunday, because the store opens on Sundays in the period 4 December 2012 to 18 December 2012.
		PROG ON	●	○	Day, month, year from ON time	Day, month, year to OFF time	A channel is to be switched on continuously from the ON time on the START date to the OFF time on the END date of a specific year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: the alarm system of an office building is to be switched on continuously during the vacation period 19:00:00 on 15 July 2012 to 06:00:00 on 7 August 2012.
		PROG OFF	●	○	Day, month, year from ON time	Day, month, year to OFF time	A channel is to be switched off continuously from the ON time on the START date to the OFF time on the END date of a specific year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: in 2012, the normal recess gong in a school is to be switched off during the summer holidays 00:00:00 on 28 July 2012 to 24:00:00 on 10 September 2012.

Program-type	Execution	Characteristics	ON/OFF times	Weekday assignments	Active period START date	Active period END date	Application, objectives, examples
EXCEPTION	MOVABLE	MON TO SUN	●	○	Day, month, ---- from 0:00:00 hours	Day, month, ---- to 24:00:00 hours	An exception program is to replace an existing annual program every year on a movable public holiday. e.g. The lights in a church are to be switched from the daily switch program on the liturgical public holidays.
		INDIVIDUAL	●	●	Day, month, ---- from 0:00:00 hours	Day, month, ---- to 24:00:00 hours	An exception program is to perform a switching cycle every year on the Tuesday after Whitsun. e.g. Every year on the Tuesday after Whitsun, gate access to the factory site is not to be opened.
		PROG ON	●	○	Day, month, ---- from ON time	Day, month, ---- to OFF time	To be switched on permanently at Easter every year. This exception program is to fully replace other possible existing weekly or annual programs. e.g. In contrast to the normal daily lighting times of a church, to be switched on every year at Easter from 17:00:00 to 24:00:00.
		PROG OFF	●	○	Day, month, ---- from ON time	Day, month, ---- to OFF time	To be switched off permanently every year from the start date of the switch-on time to the end date of the switch-off time. This exception program is to fully replace other possible existing weekly or annual programs within the date interval. e.g. In contrast to the normal sequence in a business, the energy supply of certain systems is to be switched off at 6:00:00 on the Easter public holidays every year due to rest days.

Select the option PROGRAM / WEEK for a program which is to be executed a on specific days of the week and is to be repeated weekly.

Select the option PROGRAM / YEAR for a program which is to be executed each year or only in a specific year. The execution period within the year can be defined by entering start and end dates.

Select the option PROGRAM / EXCEPTION for a program which is to completely replace existing weekly or annual programs during a specified period.

Priorities of the various program types within the same channel:

	WEEK program	YEAR program	EXCEPTION program
WEEK program	The various weekly programs are ORed together	The various weekly and annual programs are combined with a logical or	The exception program is overriding within its defined period of activity.
YEAR program	The various weekly and annual programs are ORed together	The various weekly and annual programs are combined with a logical or	The exception program is overriding within its defined period of activity.
EXCEPTION program	The exception program is overriding within its defined period of activity.	The exception program is overriding within its defined period of activity.	The various exception programs are ORed together